REMARKS

Claims 38, 40, 54-56, 63, 64, 66, 68, 72-77, 79-85, 87, and 88 were pending in this application. Claims 68, 73, 75-77, 79, and 87 are canceled, and rejections of the canceled claims are hereafter treated as moot. Applicant expressly reserves the right to pursue protection of any or all canceled subject matter in a continuing application. Claims 38, 54, 55, 63, 72, 74, 80, 81, and 83 have been amended and new claims 100-105 have been added.

Support for the new claims is found throughout the original specification and claims, for example, at page 5, lines 25-26, page 19, lines 22-24, page 20, lines16-17, page 22, lines 4-5, page 23, lines 9-13, page 23, lines 23-32, page 24, lines 30-32, Example 2 (see, particularly, page 28, lines 6-9), and original claim 20. Support for the amended claims is discussed below where necessary. No new matter is introduced by these amendments.

After entry of this amendment **claims 38, 40, 54-56, 63, 64, 66, 72, 74, 80-85, 88, and 100-105 are pending in this application**.

Telephone Interview:

Applicant thanks Examiner Marvich for the courtesy of a helpful telephone interview with her representative, Debra Gordon, on April 18, 2006. Proposed claim amendments (for discussion purposes only) were delivered to the Examiner prior to the interview. During the telephone conference, the proposed claim amendments, enablement rejection (35 U.S.C. §112, paragraph 1) of claims 38, 40, 54-56, 63, 64, 66, 68, 72-77, 79-85, 87, and 88, and the Armstrong *et al.* reference (*Cell*, 95:93-104, 1998), which is cited in the rejection under 35 U.S.C. 102(b), were discussed.

Among other things, Applicant's representative and Examiner Marvich discussed features of the proposed claims that Applicant believes are not taught or suggested by Armstrong *et al.* and that support the enablement of the claimed methods. In addition, the commonly known Cys_4 and Cys_2His_2 structural motifs used to group functionally related zinc finger binding domains were discussed. Applicant's representative explained that GATA-1 has a Cys_4 motif and EKLF

has a Cys_2His_2 motif; thus, similar results are shown in the application with two different classes of zinc finger binding domains.

Also discussed during the interview was the Office's statement that "the zinc-finger DNA binding domains were insufficient to direct remodeling by E-RC1[; t]he entire transcription factor was required for chromatin remodeling and transcriptional activation" (*e.g.*, at page 6, first paragraph of the Office action). Applicant's representative explained that transcription could not be observed with a SWI/SNF-isolated DNA binding domain complex because the activation domain of the transcription factor (from which the DNA binding domain was derived) was missing. It is common knowledge that the activation domain of zinc-finger-containing transcription factors typically is necessary for transcription to occur. However, transcription is a separate and distinct event that is downstream of (i) a direct interaction between a SWI/SNF chromatin remodeling complex and all or part (*e.g.*, a zinc finger DNA binding domain) of a transcription factor, and (ii) chromatin remodeling secondary to such interaction. Therefore, transcription is unrelated to the inventor's findings that a variety of SWI/SNF complexes (*e.g.*, a native SWI/SNF complex, an E-RC1 complex, and a minimum complex of BRG1 and BAF155) form direct interactions with a variety of isolated zinc finger DNA binding domains and that such interactions result in chromatin remodeling (as measured, *e.g.*, by DNAse hypersensitivity). The Examiner generally agreed with the foregoing propositions.

Complete agreement on claim amendments or arguments for overcoming the pending rejections was not reached; however, the Examiner provided helpful guidance and agreed to consider claim amendments and arguments filed by Applicant in a response to the Office action. It is believed that this Amendment conforms to the spirit of the discussion had during the telephone interview.

Claim Rejections under 35 U.S.C. §112, first paragraph:

Claims 38, 40, 54-56, 63, 64, 66, 68, 72-77, 79-85, 87, and 88 have been rejected under 35 U.S.C. §112, first paragraph "because the specification[, allegedly,] . . . does not reasonably provide enablement for identifying a compound *in vivo* or *in vitro* that modulates direct interaction or chromatin remodeling with any SWI/SNF chromatin remodeling complex and any

DNA binding domain peptide." Applicant traverses this rejection, at least, for the reasons discussed below.

As a preliminary matter, Applicant thanks the Examiner for indicating that the specification is "enabling for identifying a compound *in vitro* that modulates direct interaction or modulates chromatin remodeling between mammalian SWI/SNF BRG1 complex with EKLF and GATA-1." Newly added claims 101, 102, 104 and 105 recite substantially this subject matter and even more particularly recite a "*zinc finger DNA binding domain peptide* . . . from GATA-1 [and/]or EKLF" (emphasis added). Accordingly, Applicant believes (at least) these claims satisfy the enablement (and other) requirement(s) for patentability.

In simple terms, each of the disputed claims is directed to a screening method involving, at least, particular SWI/SNF chromatin remodeling complexes containing BRG1 and particular zinc finger DNA binding domain peptides (*i.e.*, zinc finger DNA binding domain peptides that immunoprecipitate with the particular SWI/SNF chromatin remodeling complexes). Screening methods were exceedingly well known in the art at the time of filing of the application. The MPEP explains that "[t]he more that is known in the prior art about the nature of the invention, how to make, and how to use the invention, and the more predictable the art is, the less information needs to be explicitly stated in the specification" to satisfy the enablement requirement (MPEP §2164.03 and cited case law). Thus, Applicant respectfully submits that the bar is quite low for Applicant to teach one of ordinary skill in the art how to make and use another screening method.

The Office seems concerned that "any SWI/SNF chromatin remodeling complex and any DNA binding domain peptide" will not form a direct interaction and, therefore, the disputed "claims read[] on significant numbers of inoperative embodiments . . . and undue experimentation is involved in determining those [embodiments] that are operative." Without capitulating to this contention and solely to advance prosecution of this application, the disputed claims have been amended to recite that the zinc finger DNA binding domain peptide recited in each claim immunoprecipitates with the SWI/SNF chromatin remodeling complex recited in such claim, and to further recite that the providing step (in claims 38, 40, and 54-56) or the

contacting step (in claims 63, 64, 66, 72, 74, 80-85, and 88) takes place "under conditions that permit the direct interaction of the SWI/SNF chromatin remodeling complex and the zinc finger DNA binding domain peptide."

Accordingly, the amended claims recite particular SWI/SNF chromatin remodeling complexes and particular DNA binding domain peptides that, by the claims' terms, immunoprecipitate and are mixed under conditions that permit their direct interaction. Hence, the claims as amended should have very few (if any) of the inoperative embodiments of concern to the Office and there is no undue burden on a person of ordinary skill in the art to practice the claimed methods.

In view of the foregoing claim amendments and arguments, Applicant requests that this rejection be with drawn.

Claim Rejections under 35 U.S.C. §102:

Claims 38, 40, 54, 63, 64, 66, 68, 72-77, 79, 80, 83, 87, and 88 have been rejected under 35 U.S.C. §102(b) as being allegedly anticipated by Armstrong *et al.*, *Cell*, 95:93-104, 1998 ("Armstrong"). Applicant traverses this rejection, at least, for the reasons discussed below.

A claim is properly rejected under 35 U.S.C. §102(b) "only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference" (MPEP §2131). More particularly, "[t]he identical invention must be shown in as complete detail as is contained in the . . . claim" (MPEP §2131).

Armstrong teaches that transcription and chromatin remodeling of the β-globin promoter "depend[s] upon" full-length EKLF and the E-RC1 SWI/SNF remodeling complex (see, *e.g.*, heading titles on page 94, column 94 and page 95, column 2 of Armstrong). Armstrong expressly says "[f]urther studies are necessary to address whether or not EKLF directly interacts with E-RC1" (at page 100, column 2).

All of the pending claims are directed to screening methods (*i.e.*, methods of identifying a compound that have a particular effect as recited in each claim). Armstrong does not teach or suggest any type of screening method at all. Thus, the "identical invention . . . in as complete detail as is contained in the . . . claims" is not shown by Armstrong, and the rejection should be withdrawn on this basis alone.

In addition to failing to teach any screening methods, there are several other particular claim features involved in the claimed methods that are not taught or suggested by Armstrong, as discussed in more detail below:

Independent claims 38 and, therefore, its dependent claims 40 and 54 have been amended to recite, in relevant part (emphasis added):

> . . .
>
> a) providing:
>
> 1) *a SWI/SNF chromatin remodeling complex consisting of BRG1 and BAF155*; and
>
> 2) a nucleic acid regulatory protein *zinc finger DNA binding domain peptide that immunoprecipitates with the SWI/SNF chromatin remodeling complex*;
>
> under conditions that permit the *direct interaction* of the SWI/SNF chromatin remodeling complex and the zinc finger DNA binding domain peptide; . . . .

As discussed above, Armstrong teaches only E-RC1 (a remodeling complex that includes at least four subunits; see Armstrong Abstract) and clearly does not teach a SWI/SNF chromatin remodeling complex consisting of two subunits, BRG1 and BAF155. Armstrong teaches only full-length EKLF protein and fails to teach any zinc finger DNA binding domain peptide (Armstrong does not even teach a zinc finger DNA binding domain peptide from EKLF). More particularly, Armstrong does not teach any zinc finger DNA binding domain peptide that immunoprecipitates with a BRG1/BAF155 minimal remodeling complex. Armstrong is further defective because it does not teach a direct interaction between any proteins described in the reference (e.g., E-RC1 and full-length EKLF). Accordingly, Armstrong does not teach a

chromatin remodeling complex consisting of BRG1 and BAF155, which directly interacts with a zinc finger DNA binding domain peptide that immunoprecipitates with such complex. Because Armstrong does not teach any of the foregoing features involved in the method of amended claims 38, 40 and 54, Armstrong cannot anticipate such claims.

Independent claim 63 and, therefore, its pending dependent claims 64, 66, 72, 74, 80, 83, and 88 have been amended to recite, in relevant part (emphasis added):

> . . .
>
> b) contacting the chromatin assembled DNA with:
>
> 1) the *SWI/SNF chromatin remodeling complex comprising BRG1*, and
>
> 2) *the zinc finger DNA binding domain peptide* of the nucleic acid regulatory protein[, which zinc finger DNA binding domain peptide immunoprecipitates with [the] SWI/SNF chromatin remodeling complex];
>
> under conditions that permit the *direct interaction* of the SWI/SNF chromatin remodeling complex and the zinc finger DNA binding domain peptide; and
>
> c) determining the level of *chromatin remodeling* in the presence and absence of a test compound; wherein a difference in the level of chromatin remodeling in the presence and absence of the test compound identifies the test compound as a compound that modulates chromatin remodeling of the specific DNA sequence within chromatin.

As discussed above, Armstrong teaches only full-length EKLF protein and fails to teach any zinc finger DNA binding domain peptide, including even a zinc finger DNA binding domain peptide from EKLF. More particularly, Armstrong does not teach any zinc finger DNA binding domain peptide that immunoprecipitates with a BRG1-containing SWI/SNF remodeling complex. Even more particularly, Armstrong does not teach that a SWI/SNF chromatin remodeling complex, even E-RC1, could remodel chromatin in the presence of less than full-length EKLF and certainly not in the presence of a zinc finger DNA binding domain peptide with which it directly interacts. Because Armstrong does not teach any of these features

involved in the method of amended claims 63, 64, 66, 72, 74, 80, 83, and 88, Armstrong cannot anticipate such claims.

In view of the foregoing claim amendment and arguments, Applicant respectfully requests that this rejection be withdrawn for all disputed claims.

Provisional Double Patenting

Claims 63, 64, 66, 68, 73, 74, and 87 have been provisionally rejected under the doctrine of obviousness-type double patenting in view of claims 69-79 of copending U.S. Application No. 10/783,672. U.S. Patent Application Publication No. 2005/0079512 (and public PAIR) shows that Application No. 10/783,672 has only claims 1-18. Applicant respectfully requests withdrawal of this rejection or clarification of which claims of U.S. Application No. 10/783,672 the Office believes support an obviousness-type double patenting rejection.

CONCLUSION

It is respectfully submitted that the present claims are in a condition for allowance. If any issues remain, the Examiner is requested to contact the undersigned attorney prior to issuance of the next Office action in order to arrange a telephone interview. It is believed that a brief discussion of the merits of the present application may expedite prosecution and allowance of the claims.

Respectfully submitted,

KLARQUIST SPARKMAN, LLP

One World Trade Center, Suite 1600
121 S.W. Salmon Street
Portland, Oregon 97204
Telephone: (503) 595-5300
Facsimile: (503) 595-5301

By: /Debra A. Gordon/
Debra A. Gordon, Ph.D.
Registration No. 54,128